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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,113	02/20/2004	Qun Feng Liao	372465-01801	5256

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EXAMINER	
CASCHERA, ANTONIO A	
ART UNIT	**PAPER NUMBER**
2676	

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/784,113	LIAO ET AL.	
	Examiner	Art Unit	
	Antonio A. Caschera	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *3-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *3-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 3-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Donovan et al. (U.S. Patent 6,975,319 B1) in view of Aono et al. (U.S. Patent 6,034,691).

In reference to claims 10 and 12, Donovan et al. discloses a system, method and article of manufacture for calculating a level of detail (LOD) value for use during computer graphics processing (see column 3, lines 33-35). Donovan et al. discloses identifying a plurality of geometrically arranged coordinates (see column 3, lines 35-36), the coordinates representing four pixels arranged in a 2x2 quadrilateral (see column 5, lines 7-11). Donovan et al. discloses determining if the pixels of the 2x2 quad are arranged on the same side of a cube and selecting a side of a cube map (see column 5, lines 36-54). Donovan et al. also discloses calculating an LOD value based upon x and y derivatives based on the cube side ID, "side" and orientation of texture axes when transforming (s', t', side) values to (l, m, n) values (see column 5, lines 60-67 and columns 7-8, lines 26-31). Although Donovan et al. discloses mapping pixels to a cube face based upon the parameter coordinate (s, t, r, q) with the highest absolute value (see column 5, lines 48-54), Donovan et al. does not explicitly disclose mapping based upon the magnitude of a

normal vector for each face. Aono et al. discloses a method of rendering an object within three dimensional space with a mirrored effect (see column 2, lines 21-23). Aono et al. discloses texture mapping coordinates corresponding to vertices of triangles of an object based upon the magnitude of normal vectors determined for each face of a cube (see column 7, lines 45-65 and column 8, lines 27-41). Aono et al. also discloses determining cube face id's and defining the orientations of texture axes using the above mentioned vectors (see column 9, lines 40-60 and column 10, lines 1-45). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the cube face texture mapping techniques of Aono et al. with the texture LOD calculating techniques of Donovan et al. in order to create a greater sense of reality enhancement by simulating "mirroring", or global reflection effects based upon movement and viewpoint of an object in a scene (see column 1, lines 12-23 of Aono et al.), when texturing in a computer graphics environment. Further in reference to claim 12, both Donovan et al. and Aono et al. disclose a program storage device readable by a machine, executing instructions to perform the above disclosed texturing methods (see column 11, lines 48-50 of Donovan et al. and columns 14-15, lines 65-8 of Aono et al.).

In reference to claims 11 and 13, Donovan et al. and Aono et al. disclose all of the claim limitations as applied to claims 10 and 12 respectively above in addition, Donovan et al. discloses computing an approximation to the derivatives of the texture coordinates based upon adjusted texture axes (see column 6, lines 46-55 and column 7, lines 40-67). Aono et al. discloses obtaining a specific set of equations in order to correctly perform texture mapping based upon the face IDs (see column 10, lines 13-43). Aono et al. further discloses, in these

equations, adjusting the texture axes of the faces (by altering s and t values) (see column 10, lines 13-43).

In reference to claims 3 and 14, Donovan et al. and Aono et al. disclose all of the claim limitations as applied to claims 11 and 13 respectively above in addition, Aono et al. discloses the equations obtained from a programming "CASE" data structure (see column 10, lines 13-43) which the Office interprets functionally equivalent to the "table of codes" of Applicant's claims.

In reference to claims 4, 7, 15 and 18, Donovan et al. and Aono et al. disclose all of the claim limitations as applied to claims 11 and 13 respectively above in addition, Donovan et al. discloses computing an approximation to the derivatives of the texture coordinates using coordinates (u, v) of pixels of the 2x2 pixel quad (see column 6, lines 46-55 and column 7, lines 40-67). Aono et al. further discloses, in these equations, adjusting the texture axes of the faces (by altering the signs of s and t values via the v vector values of the equation) (see column 10, lines 13-43).

In reference to claims 5, 6, 8, 9, 16, 17, 19 and 20, Donovan et al. and Aono et al. disclose all of the claim limitations as applied to claims 4, 7, 15 and 18 above in addition, Donovan et al. discloses normalizing the texture coordinate prior to computing the LOD parameter (see s', t' coordinates generated in the range of $-1 \ldots 1$, column 5, lines 55-59). Donovan et al. also discloses adjusting the texture axes by subtracting 1 (see column 6, lines 21-42).

Response to Arguments

2. The cancellation of claims 1 and 2 along and the addition of claims 10-20 are noted.

3. Applicant's arguments, see pages 8-12 of Applicant's Remarks, filed 12/29/05, with respect to the 35 USC 103 rejection of claims 1-9 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Donovan et al. and Aono et al..

4. Applicant's arguments, see page 8 of Applicant's Remarks, filed 12/29/05, with respect to the objection to the drawings have been fully considered and are persuasive. The objection of the drawings has been withdrawn since reference numbers have now been included in Figure 5.

5. Applicant's arguments, see page 8 of Applicant's Remarks, filed 12/29/05, with respect to the objection to the specification have been fully considered and are persuasive. The objection of the specification has been withdrawn since minor informalities have been corrected.

6. Applicant's arguments, see page 8 of Applicant's Remarks, filed 12/29/05, with respect to the objection to claims 4, 5, 7 and 8 have been fully considered and are persuasive. The objection of claims 4, 5, 7 and 8 has been withdrawn since previously objected to limitations have been deleted from the claims.

References Cited

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Zatz (U.S. Patent 6,664,963 B1)

- Zatz discloses a system, method and computer program for performing shader calculations in a graphics pipeline.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung, can be reached at (571) 272-7794.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

571-273-8300 (Central Fax)

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (571) 272-2600.

aac
3/15/06 ATENT EXAMINER

Kee M. Tung
Primary Examiner